

ABSTRACT

The invention relates to an improved harmonic laser which provides an externally generated harmonic beam. According to the invention, a third harmonic laser or higher harmonic laser is provided. The laser includes a first reflector and a second reflector for fundamental beam, forming a resonator cavity having an optical axis. The resonator includes a laser medium for producing a fundamental beam. The first reflector is highly reflective for fundamental beam. The second reflector is at least partially reflective for fundamental beam. A second harmonic generator is located within the resonator formed between the first high reflector and the second reflector for generating a second harmonic beam from the fundamental beam. Preferably the second harmonic generator is located so that the fundamental beam makes a first and second pass through the second harmonic generator. The resonator produces two output beams at least one of which is a harmonic beam. One or more output couplers are provided to remove at least a portion of the output beams. A third harmonic or higher generator is positioned external to the resonator cavity and is located along the optical path from the output coupler, so that the output beams from the resonator incidents on the third harmonic or higher generator where portions of the output beams are converted to third harmonic or higher beam.